GAME NO. 869
APRIL, 1980

MIDWAY'S

Galaxian

"COCKTAIL"

PARTS AND OPERATING MANUAL



MIDWAY MFG. CO.
A BALLY COMPANY
10750 WEST GRAND AVENUE
FRANKLIN PARK, ILLINOIS 60131
U.S.A.

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TABLE OF CONTENTS

WARNING

THIS GAME MUST BE GROUNDED. FAILURE TO DO SO MAY RESULT IN DESTRUCTION TO ELECTRONIC COMPONENTS.

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GENERAL INSTRUCTIONS FOR "GALAXIAN" COCKTAIL TABLE

INSTALLATION

1. Remove shipping cleats located on bottom of cabinet.
2. Install four (4) provided leg levelers to bottom of cabinet and level cabinet.
3. The power is controlled by a switch located on the bottom of the cabinet. Additional taps have been provided on the transformer to compensate for fluctuating line voltage.

LINE VOLTAGE SAFETY SWITCH

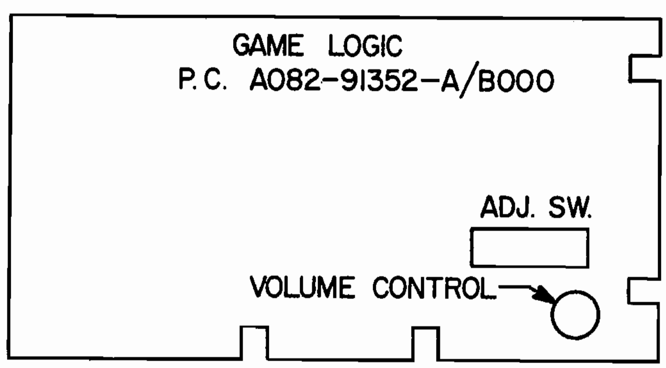
A line voltage safety switch has been provided for your protection. It is located in the cabinet on the left side of the coin door. When the coin door is opened the circuit to the line voltage is interrupted. To restore power (when servicing), pull switch fully out.

VOLUME CONTROL

The volume control pot is located on the Game Logic Board (P.C. A082-91352-A/B000). The pot controls the volume of all sounds and may be varied as desired by rotating pot control.

ADJUSTMENT SWITCHES

Located on Game Logic Board (P.C. A082-91352-A/B000) and may be adjusted as indicated on separate instruction card in back box area.



CREDIT PUSH BUTTON SWITCH

Located to right of cash box and is readily accessible by opening coin door. This switch is provided as a test aid and awards one credit without advancing coin meter.

TEST SLIDE

Located to right of cash box and is readily accessible by opening coin door. When placed in "ON" position, this switch initiates test mode.

GAME BOARD TEST

Place test slide switch in "ON" position. If game board is good, the following information will be displayed on the screen:

OK
Coin Adjustment Setting
Bonus Adjustment Setting
Number of Galaxip Per Game Setting

RAM/ROM TEST

If any of the Rams or Roms are faulty, the following information will be displayed on the screen:

"Bad Ram 1" – indicates bad Ram at location 7N or 7P.
"Bad Ram 2" – indicates bad Ram at location 3F or 3H.
"Bad Ram 3" – indicates bad Ram at location 4FH or 5FH.
"Bad Rom" – indicates bad Rom on memory board.

CONTROL PANEL AND COIN SWITCH TEST

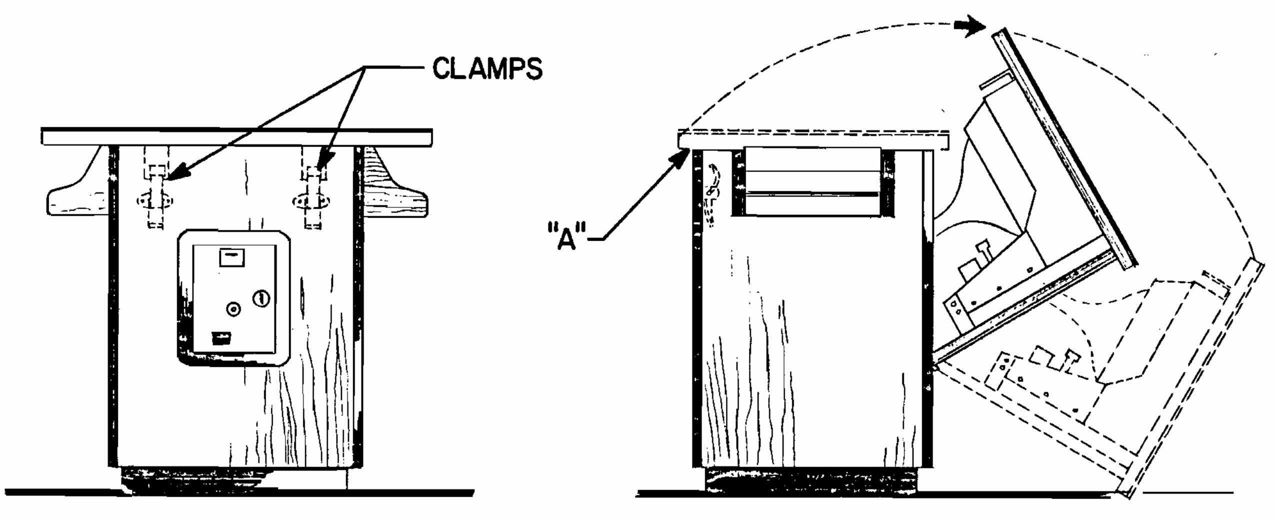
To verify operation of any switch, close switch in question. If switch is operating properly, a game sound will emit when closure is made.

Caution: Be sure to return test switch to game mode when all tests are completed.

TO SERVICE MONITOR, GAME BOARD AND TRANSFORMER ASSY.

1. Open coin box door and release two (2) clamps indicated on sketch below.
2. Grasp monitor mounting panel at "A" and open as indicated in sketch below.

Caution: Due to the weight of the monitor extreme care must be exercised when opening cabinet for service.



MONITOR - GENERAL INSTRUCTIONS
Service Set-Up Procedure

NOTE: All monitors are equipped with automatic degaussing coils which effectively demagnetize the picture tube each time the monitor is turned on. The degaussing coils will operate any time the set is turned on after having been off for at least five minutes.

The degaussing effect is confined to the picture tube since the coils are mounted on the ferrous tube shield. Should any part of the chassis or cabinet become magnetized, it will be necessary to degauss the affected area by means of a manual degaussing coil. Move the coil slowly around the CRT face area, then slowly withdraw for a distance of six feet before disconnecting the coil from the AC power supply.

Normally little, if any adjustment should be necessary. However, when a picture tube, yoke or similar component is replaced, preliminary static convergence should be done before attempting purity adjustment, and so on.

Set up should be done in a north/south direction. Horizontal and vertical centering taps should be set to the centre position if a major component has been changed.

1.0 Purity

1.1 Loosen yoke retaining clamp (figure 2), remove adhesive material fixing wedges to CRT. Remove wedges completely and clean off dried adhesive from picture tube and wedges.

1.2 A small quantity of "nail polish" has been used to lock the purity convergence rings in place. This seal must be broken with a sharp tipped instrument before any adjustments are attempted. Some models also use a locking ring at either end of the purity and convergence rings. This must be loosened before adjustments are made. It goes without saying that upon completion of all adjustments, the lock must be reset and/or a dab of paint or nail polish must be re-applied to edge of rings to prevent movement.

1.3 Connect an appropriate signal source, eg: Electrohome RGB generator producting a white field plus individual red, green and blue fields.

1.4 Bring the long and short purity tab protrusions in line with each other to obtain near-zero magnetic field (figure 4) (In some cases bring the flat and indented tabs together to obtain zero field). Protrusions can then be vertical, horizontal or at any convenient angle to start.

1.5 Turn off the green and blue fields and adjust setup controls to produce a red field. (See fig. 3)

1.6 Pull the deflection yoke back so that a red band appears in the centre of the screen.

1.7 Spread the tabs apart as little as necessary and rotate both rings together to center the red band horizontally on the face of the CRT (approximate). (See Fig. 5)

1.8 Slide the yoke towards the bell of the picture tube slowly to obtain a uniform red field (pure in color) across the entire tube face. Juggle back and forth slightly as necessary. Lightly tighten yoke retaining clamp.

1.9 Momentarily switch on a cross-hatch signal and rotate yoke to level the pattern on the face of CRT.

1.10 Return generator to regain red raster.

1.11 Turn off red field and check for pure field for each of the green and blue fields. Reposition yoke if necessary to obtain optimum purity on all fields.

1.12 Tighten yoke retaining clamp to prevent yoke shift or rotation. (Do not install wedges at this time.)

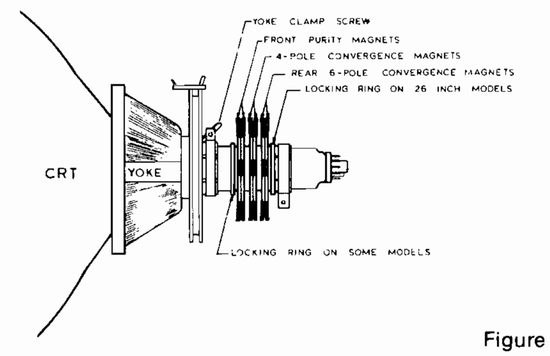


Figure 2

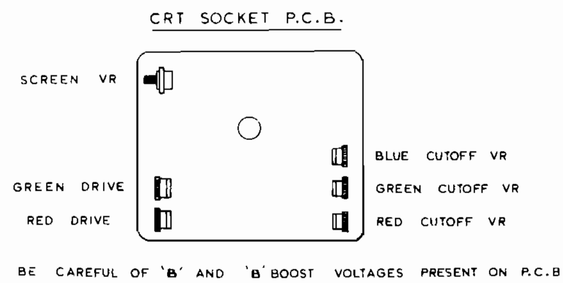


Figure 3

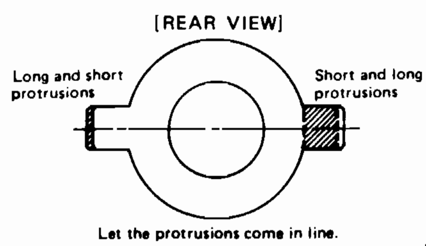


Figure 4

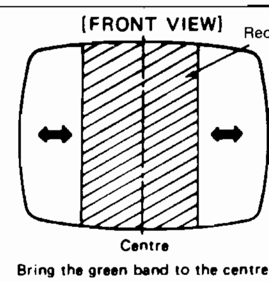


Figure 5

2.0 Static and Dynamic Convergence

NOTE: Static convergence is achieved by four magnets located on the neck, nearest the base of the picture tube, Fig. 2. The middle pair of magnetic rings are adjusted to converge the blue and red crosshatch lines. The.rear pair of convergence rings (closest to the base of the picture tube) are adjusted to converge the magenta (blue/red) to the green crosshatch lines. Dynamic convergence is achieved by tilting the deflection yoke up-down and left-right.

2.1 Ensure that the controls misadjusted during purity setup (screen, cut-off, etc.) are set to give white balance. See 3.0 below.

2.2 Switch generator to the crosshatch pattern.

2.3 Adjust convergence around the edges of the picture tube by tilting the yoke up-down and left-right, and temporarily install one wedge at the top of the yoke or in a more optimum position. (Figures 8, 9, 10)

2.4 Turn off green input and turn on the red and blue input.

2.5 Rotate the 4-pole (middle) pair of magnets as a unit to minimize separation of the red and blue crosshatch lines around the center of the screen (Figure 6). Variation of the angle between the tabs adjusts convergence of red and blue. (Tilt yoke as required to converge red and blue at the edges as in 2.3 above.)

2.6 Turn on green input to obtain magenta (red/blue) and green crosshatch lines. Rotate the 6-pole (rear) pair of magnets as a unit to minimize separation of the magenta and green lines (figure 7). Vary angle between the two tabs and further rotate as a unit to finalize.

2.7 When converence of 3 colors is optimized (static in center and dynamic around edges) apply stripe of paint or nail polish to converence magnet rings to prevent movement. If applicable, tighten locking ring carefully.

2.8 Remove temporary wedge from yoke. Tilt yoke in up-down and left-right direction for best circumference convergence and install 3 wedges. (It is best to use 3 new wedges since they have adhesive backing. Simply pull off tape, slide wedge in place and press outer flap down firmly. For more permanency apply small quantity of silastic or similar material at junction of wedges and picture tube. Do not disturb while material is setting. (Order wedges by part number 39-1233-01).

3.0 White Balance (Grey Scale Tracking)

Refer to figure 3. Do the following in subdued light:

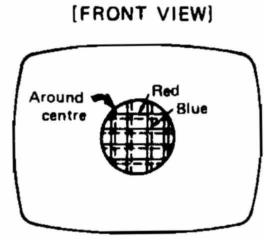
3.1 Note this adjustment can be accomplished with no signal connected; eg: input connector open or if a signal generator is connected, switch off all 3 inputs at the generator.

3.2 Set red and green drive controls to their mechanical center and turn the common G2 screen control and 3 cut-off controls to minimum (fully counterclockwise).

3.3 Slowly turn up G2 screen control until the first faint color appears, then back off to edge of visibility. Do not touch the associated cut-off control - it should stay fully CCW for the remaining set-up.

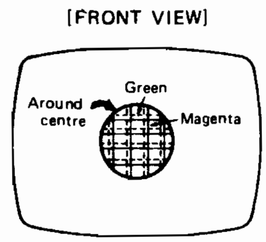
3.4 Slowly turn up the other two color cut-off controls in turn to match the first. This should result in the faintest grey.

3.5 Turn on the signal generator with all 3 inputs on. (a crosshatch pattern would be appropriate).



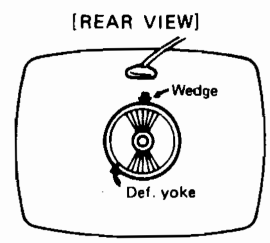
Let the red and blue lines come in line by turning two 4-pole magnets.

Figure 6



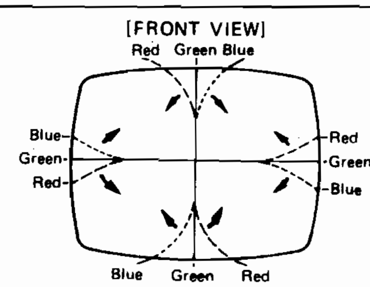
Let the green and magenta lines come in line by turning two 6-pole magnets.

Figure 7



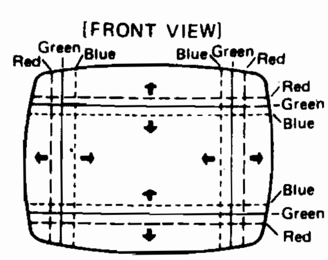
Roughly adjust the circumferential convergence and install one wedge temporarily.

Figure 8



Tilting the yoke upward will move the lines as shown with the arrows.

Figure 9



Tilting the yoke to the right will move the lines as shown with the arrows.

Figure 10

3.6 Adjust the red and green drive controls for "neutral white" on high white picture areas. Generally these controls will be left at mech. centre.

3.7 Note: When monitor is re-connected with the game the screen control (G2) may require a slight adjustment to obtain proper black level. (the black portion of picture just extinguished).

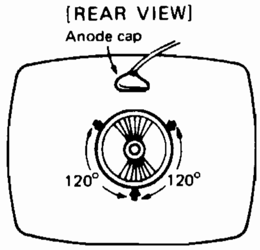


Figure 11

4.0 Power Supply

The regulated +B1 control (R909) has been factory adjusted and normally requires no adjustment. However, if any repairs have been made to the chassis it is recommended that this adjustment should be made.

a) Allow 5 minutes to warm up.
b) No signal applied.
c) Connect an accurate D.C. voltmeter to TP-91 or the emitter of X04 power regulator transistor.
d) Adjust R909 for 120V. (See fig. 1)

Note:

Should +B1 control be set too high, it may cause possible component damage. Use an accurate D.C. voltmeter to set B1 (B+).

5.0 Focus

Adjust focus control for best overall definition and picture detail an average signal applied. (Highlights should be favoured.)

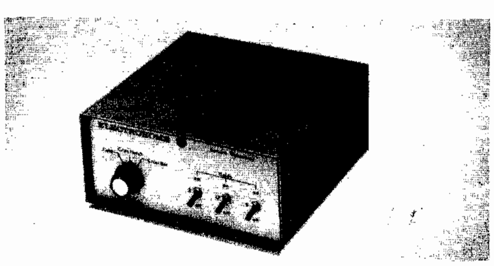
6.0 Color Service Generator for G07 Monitor

Electrohome has developed a color service generator that is specifically designed for use with the G07 color data monitor. It provides the monitor with both horizontal and vertical sync, as well as the following test patterns:

1) Fine cross-hatch pattern
2) Broad bar cross-hatch pattern
3) Complete field

Three color selection switches, red, green and blue, provide the ability to display the above patterns in the three primary colors as well as the three secondary colors.

This product may be ordered from:
Contracts Marketing
ELECTROHOME Electronics
809 Wellington St. North
Kitchener, Ontario
Canada N2G 4J6
Telephone: (519) 744-7111, Ext. 567



7.0 X-Ray Emission Check

7.1 Assure the power supply B1 is properly adjusted to 120V DC. See Item 4.0 (page 8)

7.2 Assure that the anode voltage does not exceed max. as per Item 2.0 page 4.

7.3 Assure that the high voltage hold down circuit is operating correctly. Use the following procedure.

a) Increase the B1 greater than 138.5V by shorting collector/emitter of the power regulator, X04.

b) Observe that the anode voltage (EHT) goes to 0. If the EHT does not go to 0, a fault must be located and repaired.

c) Remove short and set should return to normal operation. (Note, after the short is removed some monitors may not restart. In this case, remove power from monitor momentarily and normal operation will be restored.

Note:

The protector circuit consists of the components shown below in Fig. 13 with a circuit description.

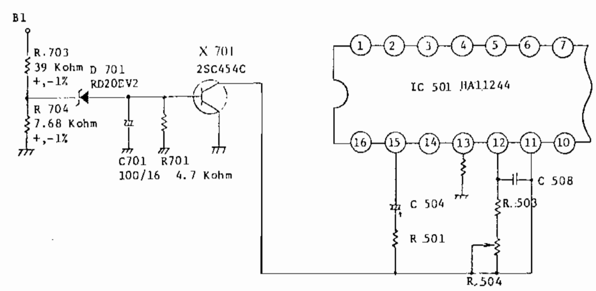


Figure 13

8.0 Circuit Diagram and Description of High Voltage Hold Down or Safety Circuit

8.1 Circuit Diagram of High Voltage Hold Down Circuit.

8.2 Operation of High Voltage Hold Down Circuit.

The high voltage hold-down circuit protects the high voltage circuit from dangerous voltage with short circuiting between emitter and collector of power regulating transistor.

The base voltage of X701 is increased when the B1 voltage is increased more than 138.5 V DC.

When the base of X701 is increased, a short is produced by X701 between pin 11 and ground of IC 501, shutting down the horizontal osc. and high voltage.

SWITCH ADJUSTMENTS

PROGRAM NO. 1

METHOD OF PLAY	SW. 1	SW. 2
1 COIN = 1 PLAY	OFF	OFF
2 COINS = 1 PLAY	ON	OFF
1 COIN = 2 PLAYS	OFF	ON
FREE PLAY	ON	ON

BONUS GALAXIP	SW. 3	SW. 4
NO BONUS GALAXIP	OFF	OFF
BONUS GALAXIP AT 4000 PTS.	ON	OFF
BONUS GALAXIP AT 5000 PTS.	OFF	ON
BONUS GALAXIP AT 7000 PTS.	ON	ON

NUMBER OF GALAXIP PER GAME	SW. 5
3 GALAXIP PER GAME	OFF
5 GALAXIP PER GAME	ON

M051-00866-A006

PROGRAM NO. 2

METHOD OF PLAY	SW. 1	SW. 2
1 COIN = 1 PLAY	OFF	OFF
2 COINS = 1 PLAY	ON	OFF
1 COIN = 2 PLAYS	OFF	ON
FREE PLAY	ON	ON

BONUS GALAXIP	SW. 3	SW. 4
NO BONUS GALAXIP	OFF	OFF
BONUS GALAXIP AT 3000 PTS.	ON	OFF
BONUS GALAXIP AT 4000 PTS.	OFF	ON
BONUS GALAXIP AT 5000 PTS.	ON	ON

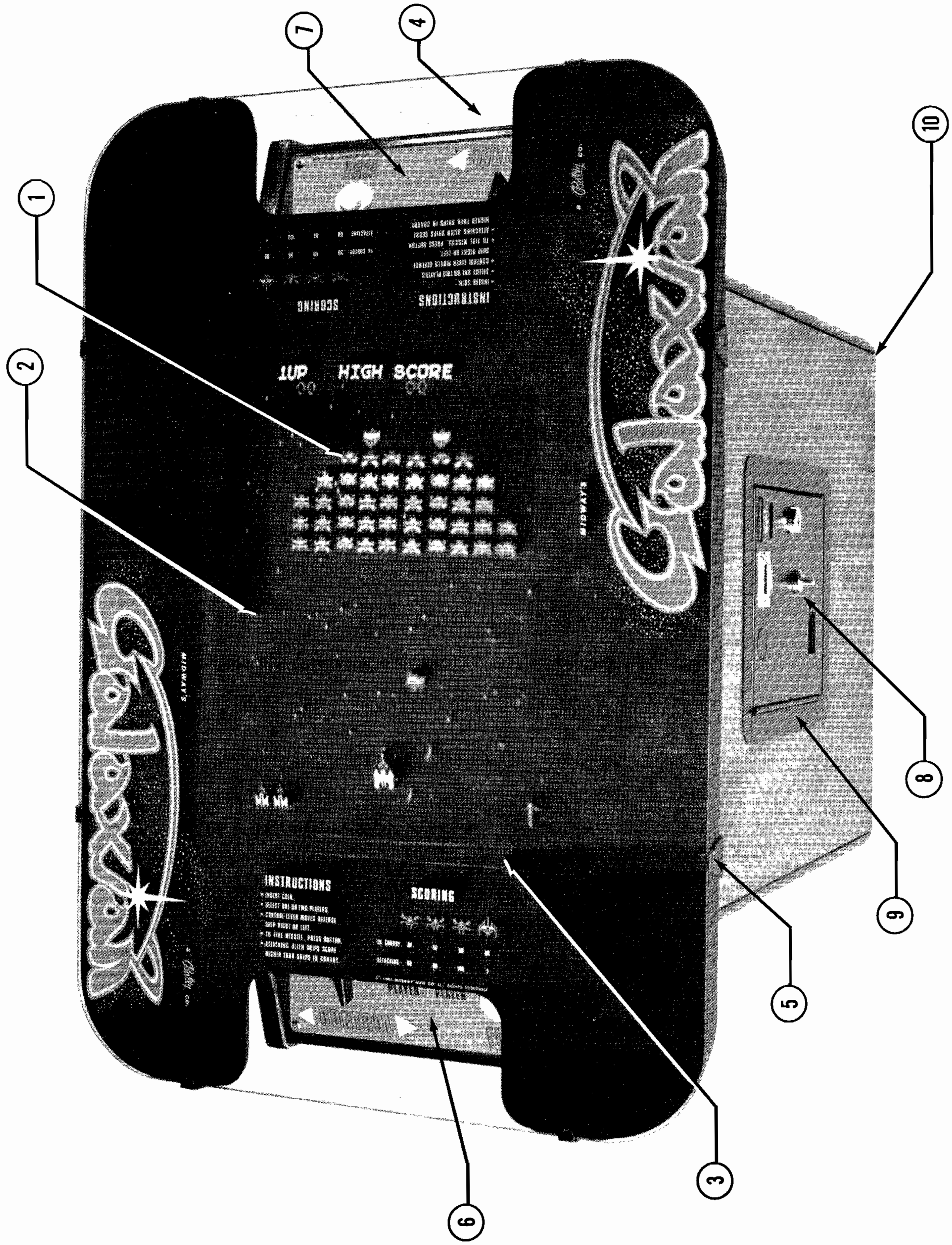
NUMBER OF GALAXIP PER GAME	SW. 5
2 GALAXIP PER GAME	OFF
3 GALAXIP PER GAME	ON

M051-00866-A005

NOTES

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NO. 869 – GALAXIAN COCKTAIL – PICTURE

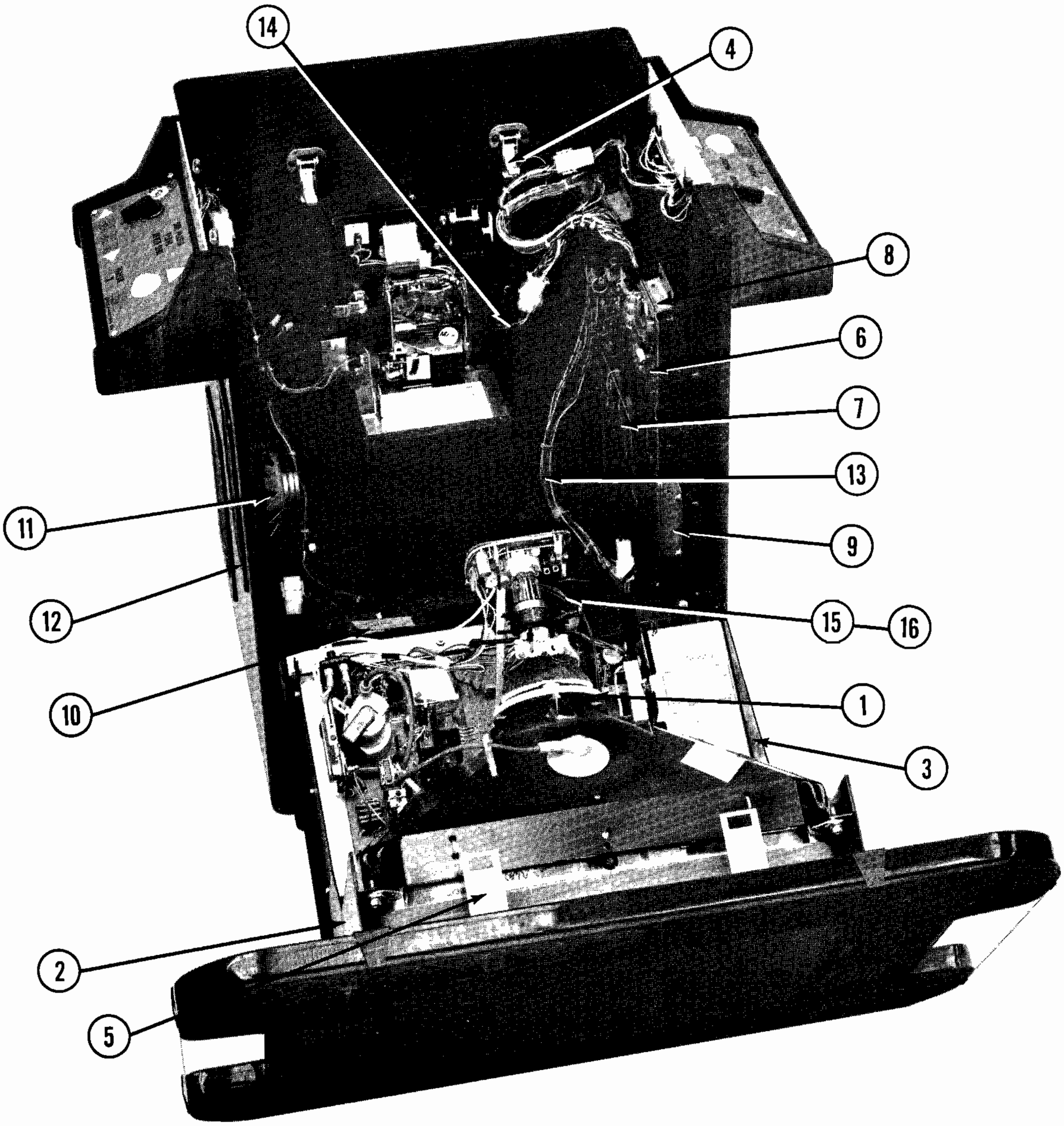


NO. 869 – GALAXIAN COCKTAIL – PICTURE

ORDER BY PART NUMBER ONLY

ITEM	PART Nº	DESCRIPTION
1	0017-00003-0308	MONITOR W/CHASSIS – ELECTROHOME
2	0869-00907-0000	PLEXI – 15" x 18-3/4"
3	0869-00902-0000	T.V. BEZEL
4	0869-00905-00XF	GLASS TOP – 32" x 22" x 1/4"
5	0775-00104-00XF	GLASS CLIPS (8 REQ'D.)
	0017-00101-0117	#8 x 5/8 PHL. TRUSS HD. S.M.S. (16 REQ'D.)
6	0869-00906-0000	SHELF OVERLAY – PLAYER #1
7	0869-00906-0100	SHELF OVERLAY – PLATER #2
	0017-00101-0341	#6 x 1/4 PHIL. TRUSS HD. M.S. – MTG. SCREWS (4 REQ'D. PLAYER #1, 4 REQ'D. PLAYER #2)
8	A090-00058-0000	FRONT DOOR ASSY. W/COIN METER
9	0090-00002-01BK	COIN DOOR FRAME
	0017-00101-0555	#6 - 32 x 5/16 SLT. HEX HD WD SCR. (3 REQ'D.) (MOUNTS COIN DOOR TO FRAME)
10	0017-00102-0048	LEG LEVELERS (4 REQ'D.)
	0017-00103-0026	LEG LEVELER NUTS (4 REQ'D.)
		<u>ADDITIONAL PARTS</u>
	A749-00003-0000	COIN BOX ASSY.
	A623-00013-0000	COIN BOX COVER ASSY.
	A625-00024-0000	COIN BOX GUIDE BRKT. ASSY.
	0625-00117-0000	COIN BOX GUIDE
	0017-00101-0628	#8 - 32 x 3/4 CARRIAGE BOLT (4 REQ'D.)
	0017-00103-0008	#8 - 32 HEX NUT (4 REQ'D.)
	A749-00005-0000	INTERLOCK SWITCH ASSY.
	0017-00101-0028	#8 x 3/4 HEX HD. S.M.S. (6 REQ'D.)
	A869-00010-0000	MONITOR SUPPORT B & WELD NUT ASSY.
	A869-00010-0100	MONITOR SUPPORT A & WELD NUT ASSY.
	0869-00901-0000	HINGE (CABINET TOP)
	0017-00101-0672	#10 - 32 x 1-1/4 CARRIAGE BOLT (8 REQ'D.)
	0017-00104-0004	#10 WASHER (8 REQ'D.)
	0017-00103-0010	#10 - 32 HEX NUT (8 REQ'D.)
	A627-00066-0000	ON-OFF SWITCH ASSY.
	0017-00101-0017	#6 x 1/2 HEX HD. S.M.S. (6 REQ'D.)
	0869-00504-0000	WOOD PEDESTAL – OPTIONAL

NO. 869 – GALAXIAN COCKTAIL – INTERIOR ACCESS PICTURE

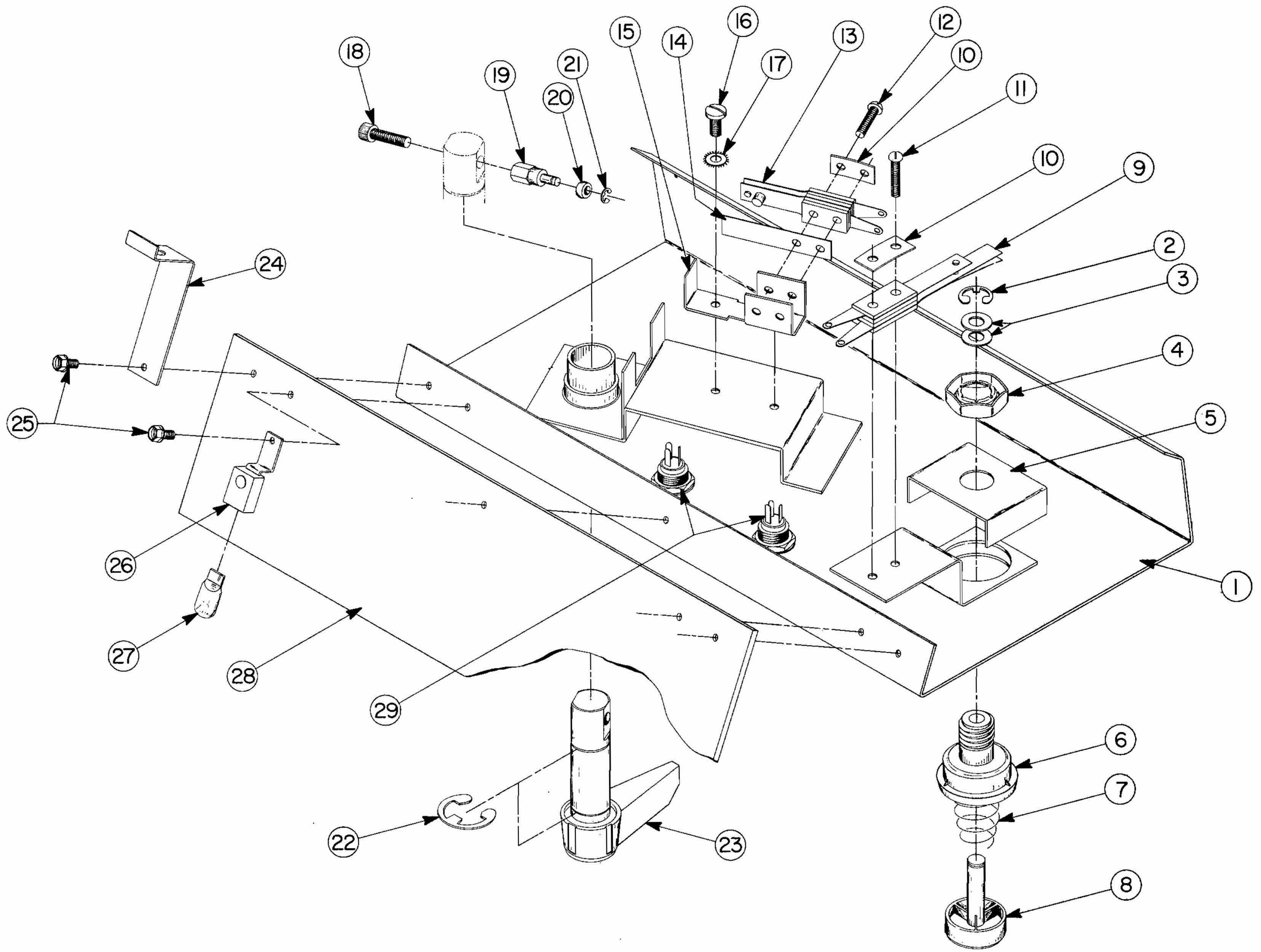


NO. 869 – GALAXIAN COCKTAIL – INTERIOR ACCESS PICTURE

ORDER BY PART NUMBER ONLY

ITEM	PART Nº	DESCRIPTION
1	0017-00003-0308	ELECTROHOME MONITOR W/CHASSIS
2	A869-00007-01XF	MONITOR SUPPORT ASSY. R.H.
3	A869-00007-00XF	MONITOR SUPPORT ASSY. L.H.
	0017-00101-0769	#10 x 3/4 SLOT HEX HD. S.M.S. (8 REQ'D.)
4	0017-00009-0033	BASSICK CLAMP (2 REQ'D.)
	0017-00101-0026	#8 x 5/8 HEX HD. S.M.S. (4 REQ'D.)
5	0610-00132-0000	STRIKE (2 REQ'D.)
	0017-00101-0028	#8 x 3/4 HEX HD. S.M.S. (4 REQ'D.)
6	A084-91352-C869	GAME LOGIC BOARD ASSY.
	A082-91365-B000	FILTER BOARD ASSY.
7	A084-91353-A866	MEMORY BOARD ASSY.
8	0624-00902-0300	P.C. SUPPORT BRKT. - 2-1/2" (2 REQ'D.)
9	0624-00902-0500	P.C. SUPPORT BRKT. - 6-1/2"
	0624-00902-0100	P.C. SUPPORT BRKT. - 12" (2 REQ'D.)
	0017-00101-0028	#8 x 3/4 HEX HD. S.M.S. (12 REQ'D.)
	0017-00104-0031	#8 WASHER (12 REQ'D.)
10	A869-00011-0000	TRANSFORMER BOARD ASSY.
11	0017-00003-0187	6 x 9 SPEAKER 8 OHM, 9V.
12	0017-00009-0343	SPEAKER GRILL (3 REQ'D.)
	0017-00101-0642	#8 - 32 x 1-1/2 CARRIAGE BOLT (4 REQ'D.)
	0017-00101-0118	#8 - 32 x 1-1/8 CARRIAGE BOLT (8 REQ'D.)
	0017-00103-0061	#8 - 32 HEX NUT SEMS. (12 REQ'D.)
13	A869-00015-0000	MASTER CABLE ASSY.
14	A869-00014-0000	COIN DOOR CABLE ASSY.
15		FAN ASSY.
	0017-00003-0222	FAN
	0775-00110-00XF	FAN PLATE
	0749-00106-00XF	VENT SCREEN
	0017-00101-0347	#6 - 32 x 1/2 PHIL. R.H.M.S. (4 REQ'D.)
	0017-00104-0009	#6 EXT. WASHER (4 REQ'D.)
	0017-00103-0005	#6 - 32 HEX NUT (4 REQ'D.)
	0017-00101-0026	#8 x 5/8 SLOT. HEX HD. S.M.S. (4 REQ'D.)
16		SUBSTITUTE FAN ASSY. – DOMESTIC
	0017-00003-0310	EXHAUST FAN 115V. 60 HZ
	0017-00009-0485	FAN FINGER GUARD
	0869-00909-0000	FAN SHROUD
	0870-00700-00XF	FAN SPACER (4 REQ'D.)
	0017-00101-0583	#6 - 32 x 1-1/4 CARRIAGE BOLT (4 REQ'D.)
	0017-00103-0052	#6 - 32 LOCKNUT (4 REQ'D.)
	0017-00104-0019	#6 FLAT WASHER (4 REQ'D.)

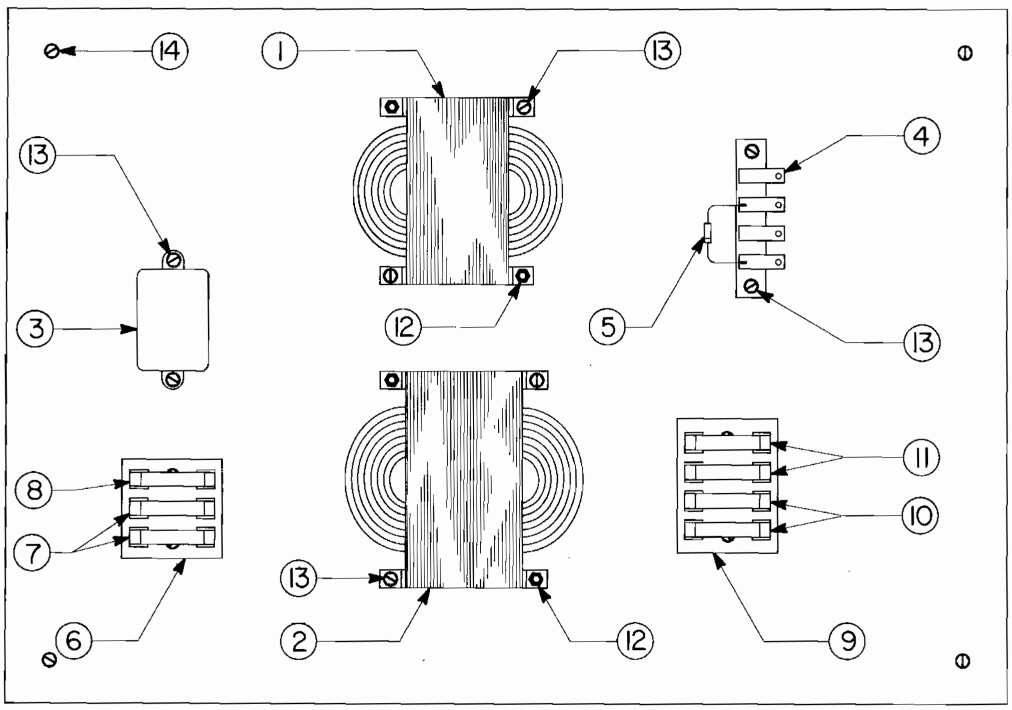
NO. 869 – GALAXIAN COCKTAIL – CONTROL SHELF ASSY.



NO. 869 – GALAXIAN COCKTAIL – CONTROL SHELF ASSY.

ORDER BY PART NUMBER ONLY

ITEM	PART №	DESCRIPTION
1	A869-00002-00XF	SHELF PLATE ASSY. – PLAYER #1
	A869-00002-01XF	SHELF PLATE ASSY. – PLAYER #2
2	0017-00100-0025	1/4 E-RING
3	0017-00104-0028	FLAT WASHER (2 REQ'D.)
4	0017-00103-0054	PAL NUT
5	0775-00105-00XF	SPACER
6	0017-00009-0376	HOUSING
7	0010-00593-0000	SPRING
8	0017-00009-0384	BUTTON
9	0586-00036-0000	PUSH BUTTON SWITCH ASSY.
10	0020-00202-0000	SWITCH PLATE (3 REQ'D.)
11	0017-00101-0522	#5 - 40 x 7/16 RD. HD. M.S. (2 REQ'D.)
12	0017-00101-0525	#5 - 40 x 9/16 SLOT. RD. HD. M.S. (4 REQ'D.)
13	A775-00005-0000	SWITCH ASSY. (2 REQ'D.)
14	0020-00240-0010	TENSION LEAF .010 (2 REQ'D.)
15	0775-00101-00XF	SWITCH MTG. BRKT.
16	0017-00101-0517	#5 - 40 x 1/4 SLOT PAN HD. M.S. (2 REQ'D.)
17	0017-00104-0009	#6 EXT. LOCKWASHER (2 REQ'D.)
18	0017-00101-0720	#10 - 32 x 3/4 SOCKET HD. CAP SCREW
19	0775-00701-00XF	POST
20	0775-00902-0000	ROLLER
21	0017-00100-0015	5/32 E-RING
22	0017-00100-0050	1/2 E-RING (2 REQ'D.)
23	A869-00006-0000	KNOB & SHAFT ASSY.
24	0775-00100-00XF	SHELF MTG. BRKT. (2 REQ'D.)
25	0017-00101-0014	#6 x 1/2 SLOT HEX HD. M.S. (5 REQ'D.)
26	0017-00031-0044	LAMP SOCKETS (2 REQ'D.)
27	0017-00003-0219	#194 WEDGE LAMP 14V., .27A.
28	0869-00904-0000	LIGHT SHIELD – 3 x 11-5/32
29	0017-00032-0051	BUTTON SWITCH (PLAYER #1 ONLY) (2 REQ'D.)
		NOT SHOWN
	A869-00012-0000	PLAYER #1 CONTROL CABLE ASSY.
	A869-00013-0000	PLAYER #2 CONTROL CABLE ASSY.

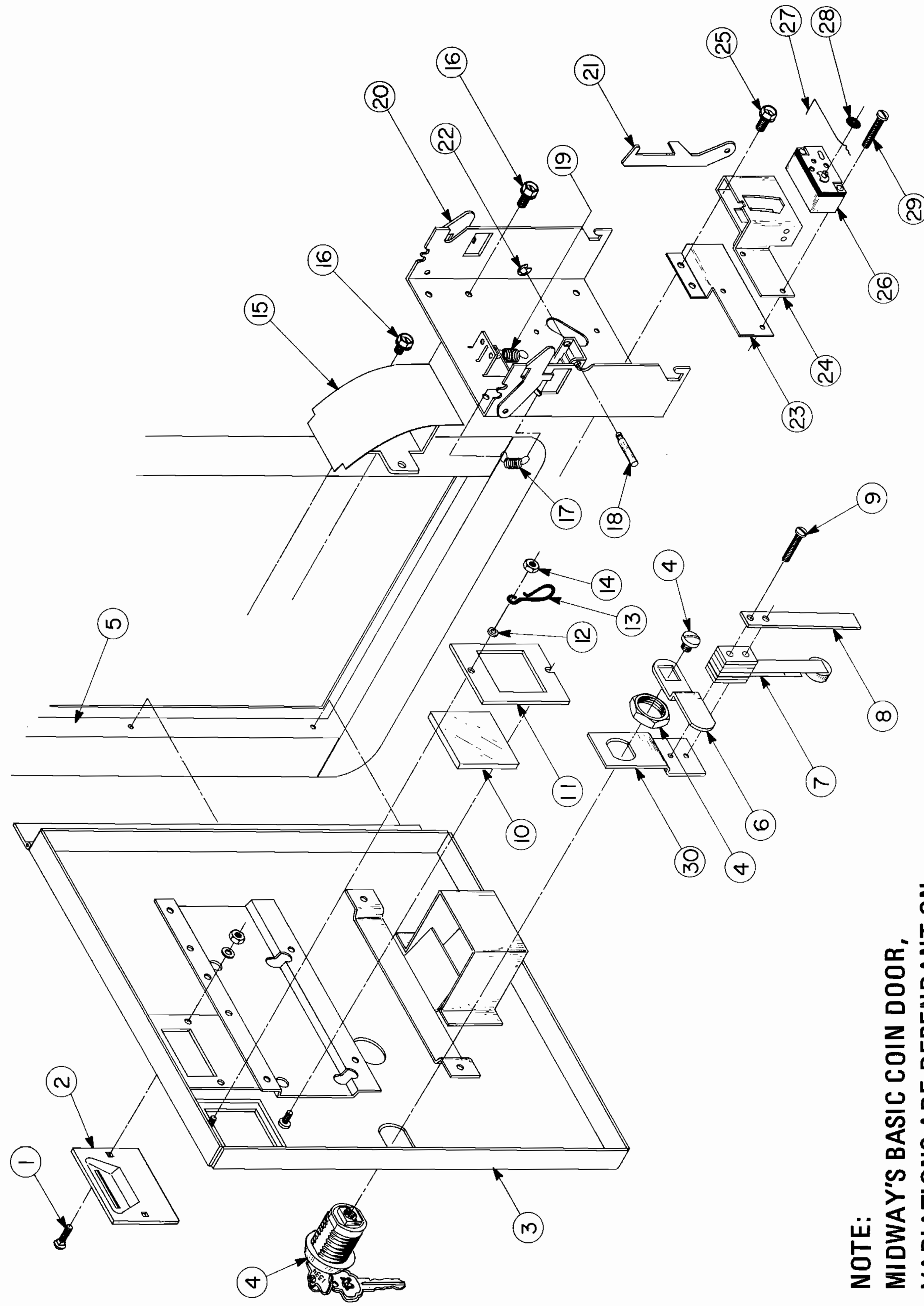

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NO. 869 – GALAXIAN COCKTAIL – TRANSFORMER BOARD ASSY.

ORDER BY PART NUMBER ONLY

ITEM	PART Nº	DESCRIPTION
1	MT00-00085-0000	TRANSFORMER – 115 VOLT, 50 HZ.
2	MT00-00084-0000	TRANSFORMER – 240 VOLT, 50 HZ.
3	0017-00003-0114	NOISE FILTER
4	A031-00002-0000	TERMINAL STRIP ASSY.
5	0064-030XX-XXPX	IN4004 400V. DIODE
6	0720-00001-0300	3 POSITION FUSE CLIP
7	0017-00003-0261	FUSE 1.5 250V. – SLO BLO (2 REQ'D.)
8	0017-00003-0005	FUSE 2A. 250V.
9	0720-00001-0400	4 POSITION FUSE CLIP
10	0017-00003-0169	FUSE 5A. (2 REQ'D.)
11	0017-00003-0001	FUSE 1-1/2A., 250V. (2 REQ'D.)
12	0017-00101-0637	#8 - 32 x 1-1/4 CARRIAGE BOLT (4 REQ'D.)
	0017-00103-0008	#8 - 32 HEX NUT (4 REQ'D.)
13	0017-00101-0014	#6 x 1/2 SLT. HEX HD. WD. SCR. (12 REQ'D.)
14	0017-00101-0018	#6 x 3/4 SLT. HEX HD. WD. SCR. (4 REQ'D.)
	A866-00049-0000	LINE CORD ASSY. – NOT SHOWN

NO. 869 – GALAXIAN COCKTAIL – FRONT DOOR ASSY.



NOTE:
MIDWAY'S BASIC COIN DOOR,
VARIATIONS ARE DEPENDANT ON
YOUR PARTICULAR GAME.

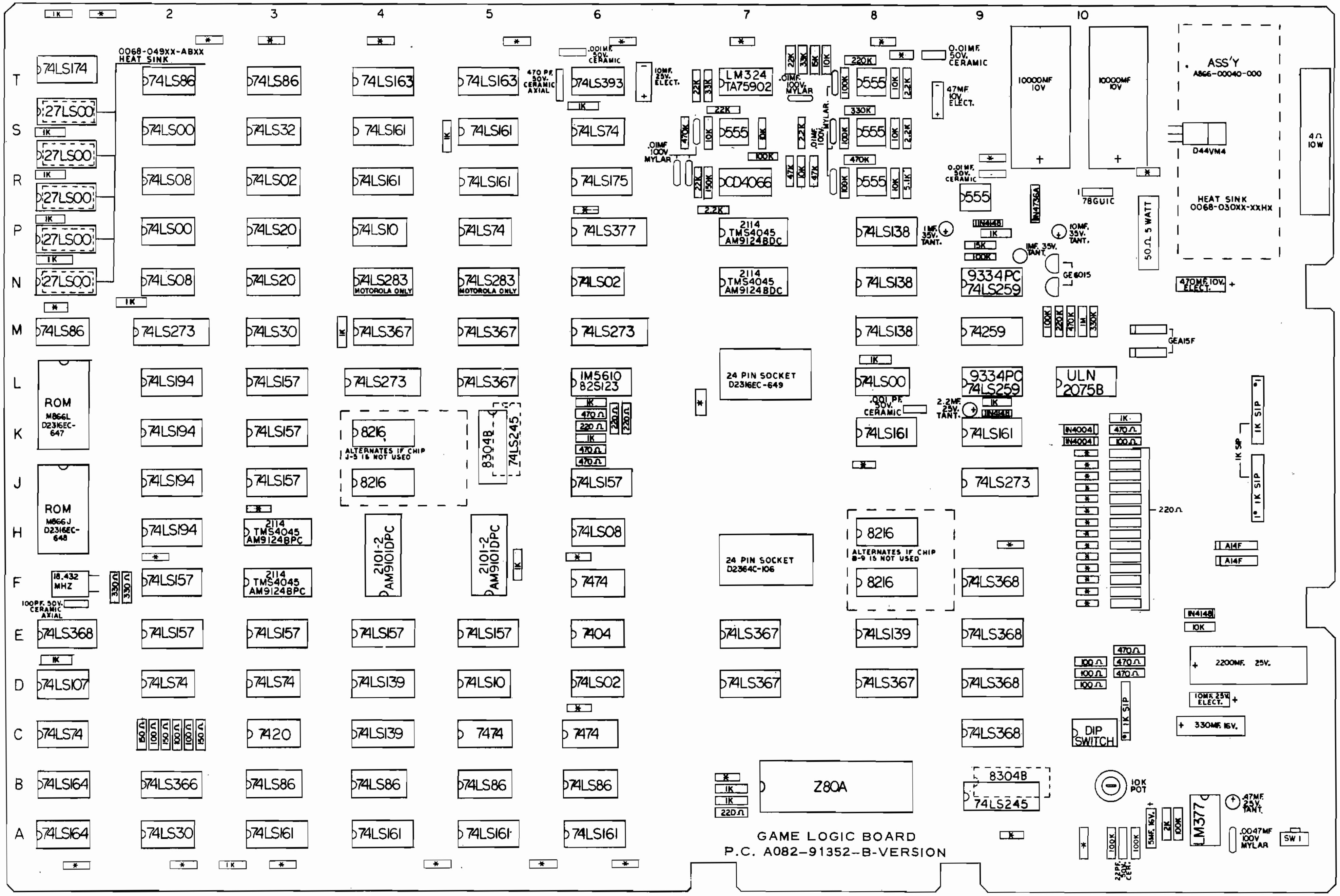
NO. 869 – GALAXIAN COCKTAIL – FRONT DOOR ASSY.

ORDER BY PART NUMBER ONLY

ITEM	PART Nº	DESCRIPTION
1	0017-00101-0552	#6 - 32 x 1/4 CARRIAGE BOLT (2 REQ'D.)
2	0090-00117-03XF	COIN ENTRY PLATE (25¢)
3	A090-00058-0000	DOOR ASSY. SINGLE ENTRY
4	0017-00005-0050	DOOR LOCK & KEY WITH SCREW & NUT
5	0090-00002-01BK	SINGLE DOOR FRAME
6	0017-00005-0041	421 N.S. CAM
7	0090-00901-0000	DOOR SWITCH
8	0090-00126-01XF	SWITCH BACKUP PLATE
9	0017-00101-0528	#5 - 40 x 3/4 LONG M.S. (2 REQ'D.)
10	0090-00903-0040	25¢ WINDOW
11	0090-00143-0000	COIN PLEX RETAINER
12	0017-00104-0002	SPLIT LOCK WASHER (2 REQ'D.)
13	0017-00007-0019	KEY HOOK
14	0017-00103-0005	#6 - 32 HEX NUT (2 REQ'D.)
15	0090-00104-0000	TOP & BOTTOM COIN CHUTE W/BRKT. ASSY.
16	0017-00101-0598	#8 - 32 x 5/16 SCREW (4 REQ'D.)
17	0010-00181-0100	SPRING
18	0090-00129-00XF	PIVOT POST
19	0010-00134-0000	SPRING
20	0090-00008-0000	ACCEPTOR FRAME ASSY.
21	0093-00155-00XF	REJECTOR LEVER
22	0017-00100-0012	E-RING
23	0093-00151-00XF	COIN GUIDE MTG. BRKT.
24	0090-00005-0000	COIN GUIDE ASSY.
25	0017-00101-0555	#6 - 32 x 5/16 SCREW (2 REQ'D.)
26	0017-00005-0039	COIN SWITCH
27	0010-00557-2500	TRIP WIRE
28	0017-00007-0132	PUSH-ON RING (BLK)
29	0017-00101-0507	#4 - 36 x 3/4 SCREW (2 REQ'D.)
30	0090-00128-00XF	SWITCH BRKT. – DOOR TILT (NOT USED)
	A090-00061-0000	ANTI-STRING DEVICE ASSY. – OPTIONAL (REPLACES ITEM 24)
	A090-00064-0000	ANTI-PENNY DEVICE ASSY. – OPTIONAL

COMPONENT LAYOUT PART NO. M051-00866-8002

* INDICATES 0.1MF. 50V. AXIAL LEAD CERAMIC CAP



NOTES:

1. 8 PULL-UP RESISTORS AND 26 DECOUPLING CAPACITORS ARE DISTRIBUTED OVER THE P.C. BOARD ASS'Y.
2. ONLY 1 PC 74LS245, OR 1 PC 8304B, OR 2 PC 8216 ARE USED (AND STUFFED) FOR BI-DIRECTIONAL DRIVERS (1 BYTE OF DATA).
3. SAME AS NOTE 2.
4. SUBSTITUTION FOR THESE ROM'S IS MEMORY BRD. ASS'Y A084-91353-A866
5. (symbol) INDICATES +5V

REV.	DESC.	DATE
B	ALL 0.1MF CER. CAP. → AX. LEAD	1-20-80

MIDWAY MFG. CO.
FRANKLIN PARK, ILL.


DRN. G. RIZZO	CKD.
DATE JAN. 1980	NO. REQ'D 1

USED ON GALAXIAN

DESC. LOGIC BOARD CIRCUITRY

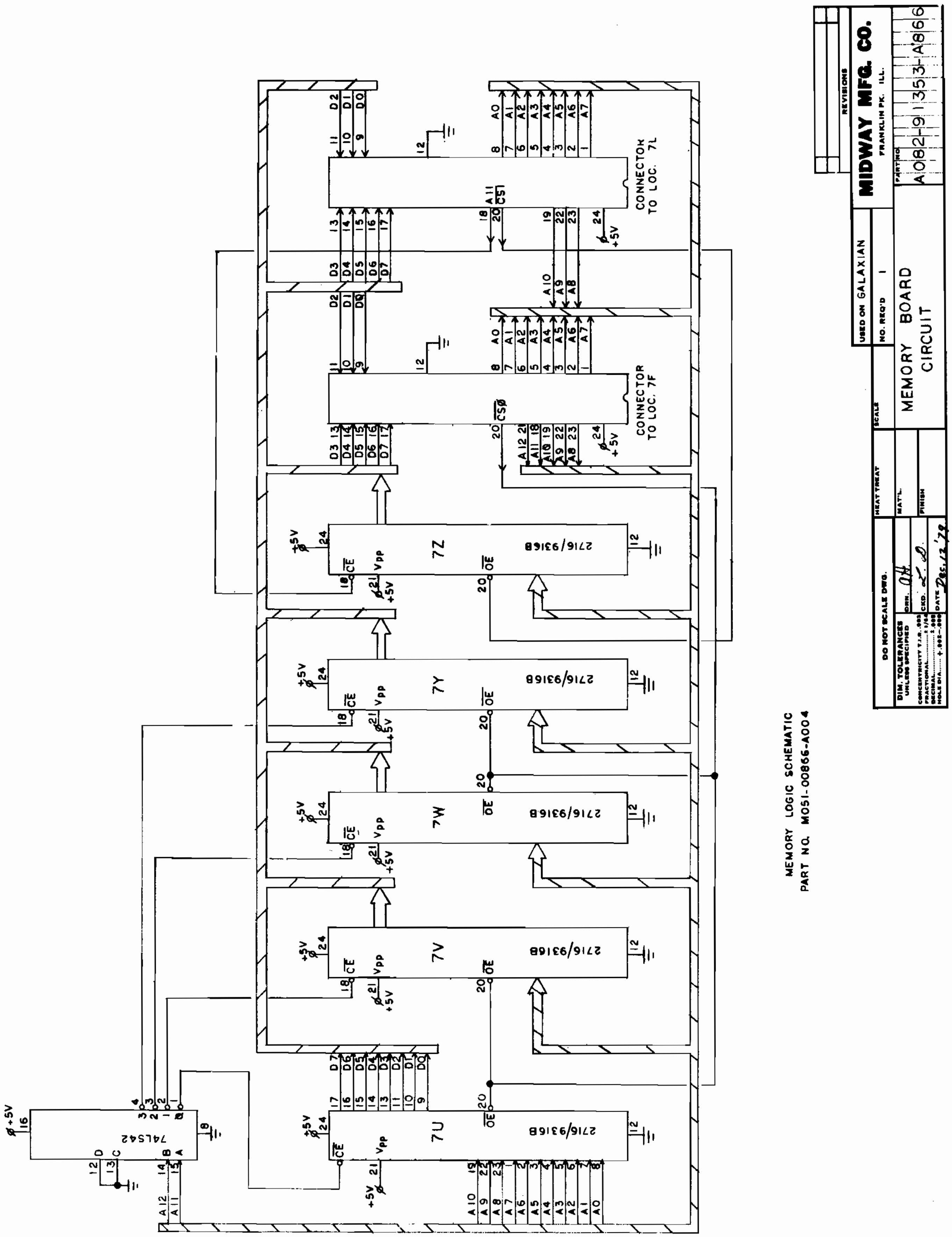
PART NO. A082-91352-A/B000

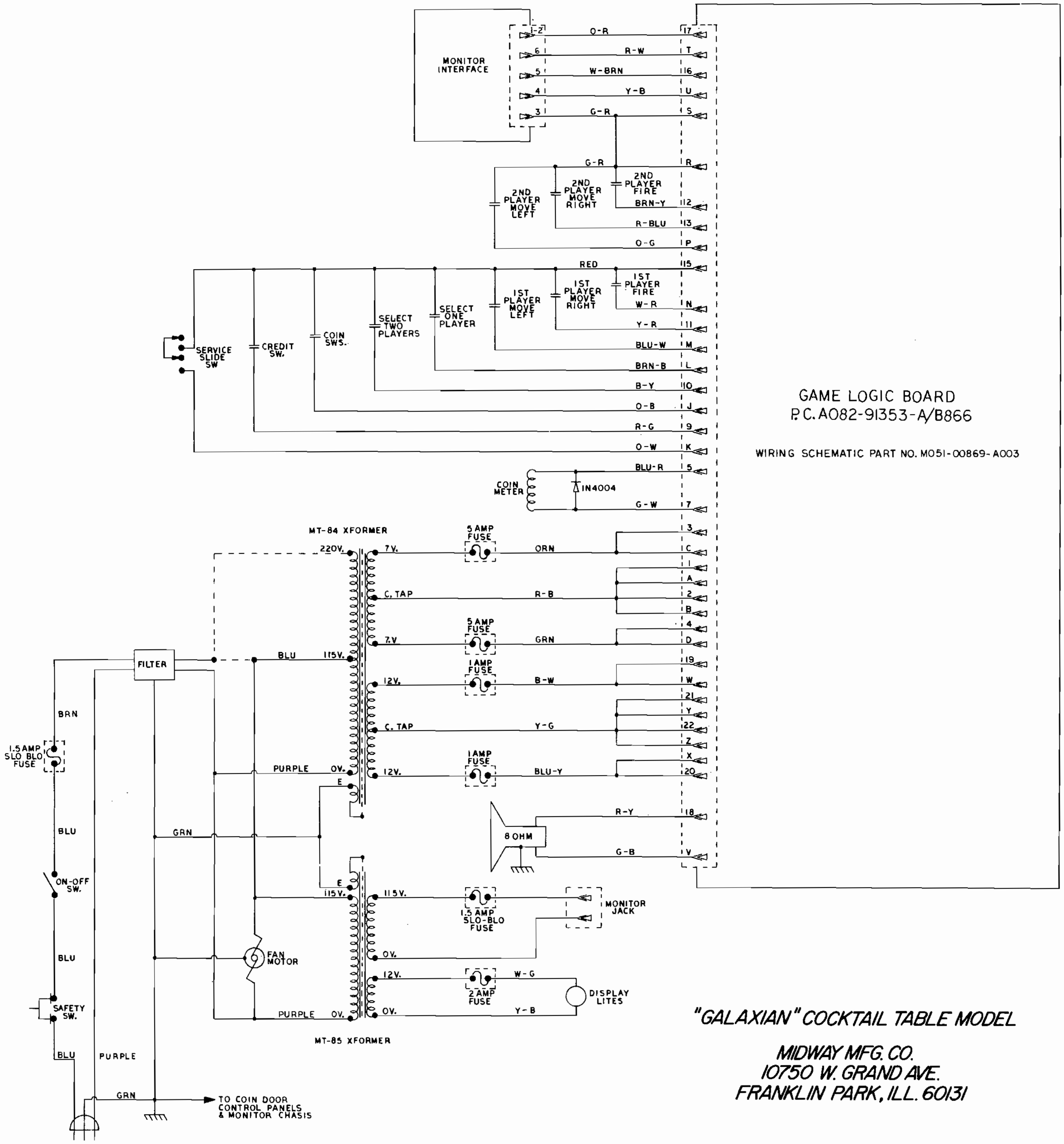
LOGIC SCHEMATIC PART NO. M051-00866-A015



NOTES

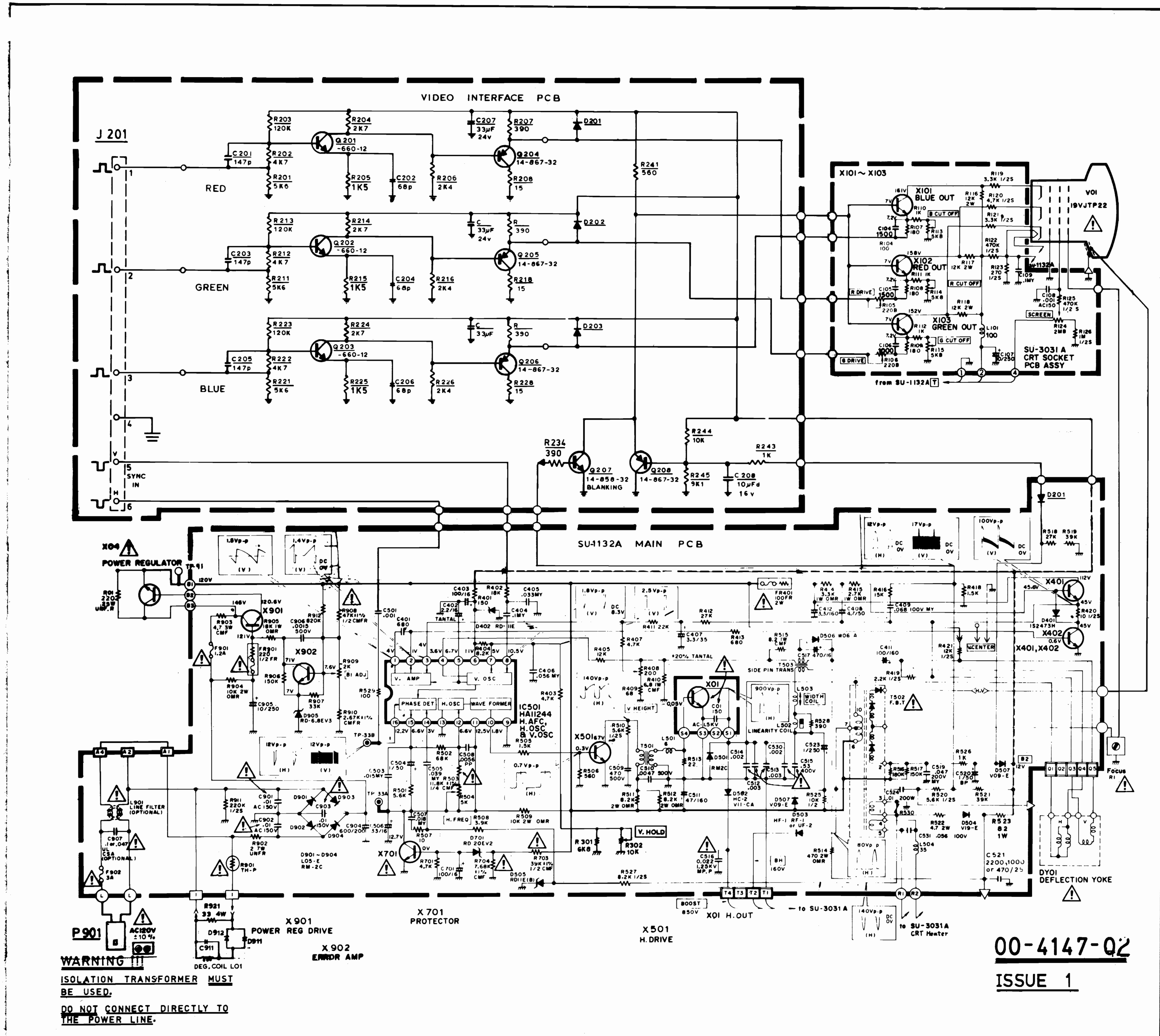
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MEMORY LOGIC SCHEMATIC
PART NO. M051-00866-A004
MIDWAY MFG. CO.
FRANKLIN PK. ILL.
USED ON GALAXIAN
MEMORY BOARD CIRCUIT
CONNECTOR TO LOC. 7L
CONNECTOR TO LOC. 7F
2716/9316B
74LS42



"GALAXIAN" COCKTAIL TABLE MODEL

MIDWAY MFG. CO.
10750 W. GRAND AVE.
FRANKLIN PARK, ILL. 60131



■ **SCHEMATIC NOTES**

UNLESS OTHERWISE SPECIFIED

RESISTANCE : (Ω) (K→KΩ, M→MΩ), 1/4 (W) CARBON RESISTOR

CAPACITANCE : 1 OR HIGHER→(pF), LESS THAN 1→(μF) WORKING VOLTAGE→50 (V) CERAMIC CAPACITOR

INDUCTANCE : (μH)

ELECTROLYTIC CAP : CAPICTANCE VALUE (μF) / WORKING VOLTAGE (V), NP→NON-POLAR (OR BIPOLAR) ELECTROLYTIC CAP

REFER TO THE PARTS LIST FOR ADDITIONAL COMPONENT INFORMATION.

⦿ INDICATES TEST POINT CONNECTION

⏚ INDICATES CHASSIS GROUND UNLESS OTHERWISE SPECIFIED

Hz INDICATES CYCLES PER SECOND

FOR SAFETY PURPOSES (AND CONTINUING RELIABILITY) ⚠ REPLACE ALL COMPONENTS MARKED WITH SAFETY SYMBOL WITH IDENTICAL TYPE

NOTE : FR→FUSIBLE RESISTOR

PARTS IDENTIFICATION ON CIRCUIT BOARDS :
e.g. SU1126A (R107 = R1107)
SU3C30A (R113 = R3113)

SCHEMATIC PART NO. M051-00087-A006

DO NOT SCALE PRINT
UNLESS OTHERWISE STATED ALL DIMENSIONS ARE IN INCHES AND SPECIFIED IN DECIMALS

NAME SCHEMATIC
RGB COLOR MONITOR
G07-905
00-4147-02

ELECTROHOME LIMITED, KITCHENER, ONTARIO, CANADA

GALAXIAN LOGIC BOARD

CHIP NUMBER	FUNCTION
74LS00	Quad Two Input Nand
74LS02	Quad Two Input Nor
7404	Hex Inverter
74LS08	Quad Two Input And
74LS10	Triple Three Input Nand
74LS20	Dual Four Input Nand
74LS30	Eight Input Nand
74LS32	Quad Two Input Or
74LS74	Dual "D" Flip – Flop
74LS86	Quad Two Input Exclusive Or
74LS107	Dual "JK" Flip – Flop
74LS138	Three to Eight Line Decoder
74LS139	Dual Two to Flour Line Decoder
74LS157	Quad Two Input Multiplexer
74LS161	Four Bit Counter
74LS163	Four Bit Counter
74LS164	Eight Bit Shift Register
74LS174	Hex "D" Flip – Flop
74LS175	Quad "D" Flip – Flop
74LS194	Eight Bit Shift Register
74LS259	Eight Big Addressable Latch
74LS273	Octal "D" Flip – Flop
74LS823	Four Bit Binary Adder
74LS245	Octal Bus Transceiver
74LS366	Hex Bus Driver – Inverting
74LS367	Hex Bus Driver
74LS368	Hex Bus Driver – Inverting
74LS377	Octal "D" Flip – Flop

GALAXIAN LOGIC BOARD

CHIP NUMBER	FUNCTION
74LS393	Dual Four Bit Binary Counter
27LS00	Ram
2114	Ram
TMS4045	Ram
AM9124	Ram
2102-2	Ram
AM9101	Ram
8304	Bus Driver – Bidirectional
8216	Bus Driver – Bidirectional
LM324	Quad Operational Amp
555	Timer
LM377	Audio Amp
Z80	CPU
2716	Prom – 16K
1M5610	Prom
78GUIC	Voltage Regulator
ULN2075	Quad Buffer
18.432	X-TAL
CD4066	Quad Electronic Switch
D44VM4	Transistor
GE6015	Transistor
MC14066	Quad Electronic Switch
GEA15F	Diode – Rectifier
A14F	Diode – Rectifier
IN4148	Diode – Rectifier
IN4736A	Diode – Zener
D2316EC	16K Rom
D2364C	64K Rom

NOTES

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